

WHAT IS CLAIMED IS:

1. An emergency reporting device to be installed in a vehicle, comprising:
a base station communication section configured and arranged to communicate
with one of a plurality of base stations and send an emergency signal to the one of the base
stations after entering a communication area of the one of the base stations with the
emergency signal;

a vehicle communication section configured and arranged to communicate with a
peripheral vehicle to receive travel information of the peripheral vehicle; and
an emergency signal control unit including

a travel information acquisition section configured to acquire travel
information of the vehicle,

a peripheral vehicle detection section configured to detect the
peripheral vehicle equipped with the emergency reporting
device in a peripheral area of the vehicle, and

a transmission determination section configured to determine whether
or not to send the emergency signal to the peripheral vehicle
based on a comparison of the travel information of the vehicle
and the travel information of the peripheral vehicle,

the vehicle communication section being further configured and arranged
to send the emergency signal to the peripheral vehicle based on a determination
result of the transmission determination section.

2. The emergency reporting device as recited in claim 1, wherein
the travel information acquisition section is further configured to acquire vehicle
data regarding the vehicle exiting a last communication area in which the vehicle last
traveled and to set the vehicle data as the travel information of the vehicle, and

the peripheral vehicle is further configured to receive peripheral vehicle data
regarding the peripheral vehicle exiting a last communication area in which the peripheral
vehicle last traveled and to set the peripheral vehicle data as the travel information of the
peripheral vehicle.

3. The emergency reporting device as recited in claim 2, wherein
the travel information of the vehicle is a travel time of the vehicle from when the
vehicle exited the last communication area in which the vehicle last traveled until the
peripheral vehicle was detected by the peripheral vehicle detection section,

5 the travel information of the peripheral vehicle is a travel time of the peripheral
vehicle from when the peripheral vehicle exited the last communication area in which the
peripheral vehicle last traveled until the peripheral vehicle is detected by the peripheral
vehicle detection section, and

10 the transmission determination section is further configured to compare the travel
time of the vehicle with the travel time of the peripheral vehicle and determine to send the
emergency signal to the peripheral vehicle when the travel time of the vehicle is shorter
than the travel time of the peripheral vehicle.

4. The emergency reporting device as recited in claim 1, wherein
15 the travel information of the vehicle is a travel distance of the vehicle from a point
where the vehicle exited the last communication area in which the vehicle last traveled
until a point where the peripheral vehicle was detected by the peripheral vehicle detection
section,

20 the travel information of the peripheral vehicle is a travel distance of the peripheral
vehicle from a point where the peripheral vehicle exited the last communication area in
which the peripheral vehicle last traveled until the point where the peripheral vehicle was
detected by the peripheral vehicle detection section, and

25 the transmission determination section is further configured to compare the travel
distance of the vehicle and the travel distance of the peripheral vehicle and determine to
send the emergency signal to the peripheral vehicle when the travel distance of the vehicle
is shorter than the travel distance of the peripheral vehicle.

5. The emergency reporting device as recited in claim 1, wherein
the travel information acquisition section further includes a vehicle position
30 detection section configured and arranged to detect a current position of the vehicle;
the emergency signal control unit further includes a communication area
information storage section configured to store information on a plurality of

communication areas of the base stations, and a distance calculation section configured to calculate a distance between the current position of the vehicle and one of the communication areas of the base stations that is in a traveling direction of the vehicle based on the current position of the vehicle and the information on the communication areas of the base stations stored by the communication area information storage section, and the distance calculation section being further configured to calculate a distance between an estimated position of the peripheral vehicle estimated based on the current position of the vehicle and one of the communication areas of the base stations that is in a traveling direction of the peripheral vehicle based on the estimated position of the peripheral vehicle and the information on the communication areas of the base stations stored in the communication area information storage section;

the transmission determination section is further configured to determine whether or not to send the emergency signal to the peripheral vehicle based on the distance between the current position of the vehicle and the one of the communication areas that is in the traveling direction of the vehicle and the distance between the estimated position of the peripheral vehicle and the one of the communication areas that is in the traveling direction of the peripheral vehicle calculated by the distance calculation section; and

the vehicle communication section is further configured to send the emergency signal to the peripheral vehicle when the transmission determination section determines to send the emergency signal to the peripheral vehicle, and not to send the emergency signal to the peripheral vehicle when the transmission determination section determines not to send the emergency signal to the peripheral vehicle.

6. The emergency reporting device as recited in claim 5, wherein the emergency signal control unit further includes a roadmap storage section configured to store roadmap information,

the vehicle communication section being further configured to receive destination information including a destination of the peripheral vehicle from the peripheral vehicle,

the one of the communication areas that is in the traveling direction of the peripheral vehicle being on a travel route from the estimated position of the peripheral vehicle up to the destination of the peripheral vehicle obtained based on the destination of the peripheral vehicle and the roadmap information stored in the roadmap storage section

as well as the estimated position of the peripheral vehicle and the information on the communication areas of the base stations stored in the communication area information storage section.

- 5 7. The emergency reporting device as recited in claim 1, wherein
the emergency signal control unit further includes
- a roadmap storage section configured to store roadmap information,
 a communication area information storage section configured to
 store information on a plurality of communication areas of the
10 base stations;
 a vehicle position detection section configured and arranged to
 detect a position of the vehicle; and
 a guide route setting section configured to set a guide route from the
 position of the vehicle to a destination of the vehicle based on
15 the roadmap information stored in the roadmap storage section,
 the guide route setting section being further configured to
 reset the guide route such that the vehicle passes within one of
 the communication areas of the base stations when the vehicle
 receives the emergency signal based on the information on the
20 communication areas stored in the communication area
 information storage section.
8. The emergency reporting device as recited in claim 1, wherein
 the emergency signal control unit further includes a traffic information reception
25 section configured and arranged to receive traffic condition information indicative of
 conditions that affects vehicle travel time.
9. The emergency reporting device as recited in claim 2, wherein
 the emergency signal control unit further includes a traffic information reception
30 section configured and arranged to receive traffic condition information indicative of
 conditions that affects vehicle travel time.

10. The emergency reporting device as recited in claim 3, wherein
the emergency signal control unit further includes a traffic information reception
section configured and arranged to receive traffic condition information indicative of
conditions that affects vehicle travel time.

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11. The emergency reporting device as recited in claim 4, wherein
the emergency signal control unit further includes a traffic information reception
section configured and arranged to receive traffic condition information indicative of
conditions that affects vehicle travel time.

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12. The emergency reporting device as recited in claim 5, wherein
the emergency signal control unit further includes a traffic information reception
section configured and arranged to receive traffic condition information indicative of
conditions that affects vehicle travel time.

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13. The emergency reporting device as recited in claim 7, wherein
the emergency signal control unit further includes a traffic information reception
section configured to receive traffic condition information indicative of conditions that
affects vehicle travel time.

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14. The emergency reporting device as recited in claim 8, wherein
the traffic information reception section is further configured to receive road
closure information indicative of locations where traffic road closures is occurring as the
traffic condition information,

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the transmission determination section being further configured to determine
whether or not to send the emergency signal to the peripheral vehicle based on the road
closure information received by the traffic information reception section.

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15. The emergency reporting device as recited in claim 8, wherein
the traffic information reception section is further configured to receive traffic jam
information indicative of locations where traffic jams are occurring as the traffic condition
information,

the transmission determination section being further configured and arranged to determine whether or not to send the emergency signal to the peripheral vehicle based on the traffic jam information received by the traffic information reception section.

5 16. An emergency reporting device installed in a vehicle for sending an emergency signal to one of a plurality of base stations comprising:

 a roadmap storage section configured to store roadmap information,

 a communication area information storage section configured to store information on a plurality of communication areas of the base stations;

10 a vehicle position detection section configured and arranged to detect a position of the vehicle; and

 a guide route setting section configured to set a guide route from the position of the vehicle to a destination of the vehicle based on the roadmap information stored in the roadmap storage section,

15 the guide route setting section being further configured to reset the guide route such that the vehicle passes within one of the communication areas of the base stations when the vehicle receives the emergency signal based on the information on the communication areas stored in the communication area information storage section.

20 17. A method of selectively sending an emergency signal from a vehicle, comprising:

 selectively sending an emergency signal to one of a plurality of base stations after entering a communication area of the one of the base stations with the emergency signal;

25 detecting a peripheral vehicle equipped with an emergency reporting device in a peripheral area of the vehicle;

 acquiring travel information of the vehicle and the peripheral vehicle;

 determining whether or not to send the emergency signal to the peripheral vehicle based on a comparison of the travel information of the vehicle and the travel information of the peripheral vehicle; and

30 selectively sending the emergency signal to the peripheral vehicle based on a determination result based on the comparison of the travel information of the vehicle and the travel information of the peripheral vehicle.

18. An emergency reporting device to be installed in a vehicle comprising:
- base station communicating means for communicating with one of a plurality of base stations and sending an emergency signal to the one of the base stations after entering
- 5 a communication area of the one of the base stations with the emergency signal;
- peripheral vehicle detecting means for detecting a peripheral vehicle equipped with the emergency reporting device in a peripheral area of the vehicle;
- travel information acquiring means for acquiring travel information of the vehicle and the peripheral vehicle;
- 10 transmission determination means for determining whether or not to send the emergency signal to the peripheral vehicle based on a comparison of the travel information of the vehicle and the travel information of the peripheral vehicle; and
- vehicle communication means for sending the emergency signal to the peripheral vehicle based on a determination result of the transmission determination means.